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RADIO AIDS PENNSYLVANIA TURNPIKE SAFETY

Radio-controlled safety for millions of motorists who travel the Pennsylvania Turnpike between Harrisburg and Pittsburgh is in operation over the entire 160-mile length of Pennsylvania's amazing super-highway.

It affords the motoring public a safeguard for accident prevention, the like of which does not exist anywhere else in the world; provides a ne and speedy method of police communication for crime prevention and detection; and installs a system of radio transmission that can be of incalculable value in the movement of troops or mobile equipment for national defense.

The radio system uses transmitting and receiving sets on each of the patrol cars of the Commission for the State Police, assigned exclusively for Turnpike duty; twenty-four two-ways sets at the Interchanges, ventilation buildings at each of the seven tunnels through which the highway passes, maintenance and fire trucks, cars of the three tellers, the Superintendent of Fares, the Superintendent of Maintenance, Superintendent of Equipment, the District Maintenance Superintendents, the office of the Turnpike Commission in Harrisburg, the State Police headquarters in the same city and the Turnpike Police headquarters at Bedford, Pennsylvania. The system also uses many additional points, strategically located, for reception only.

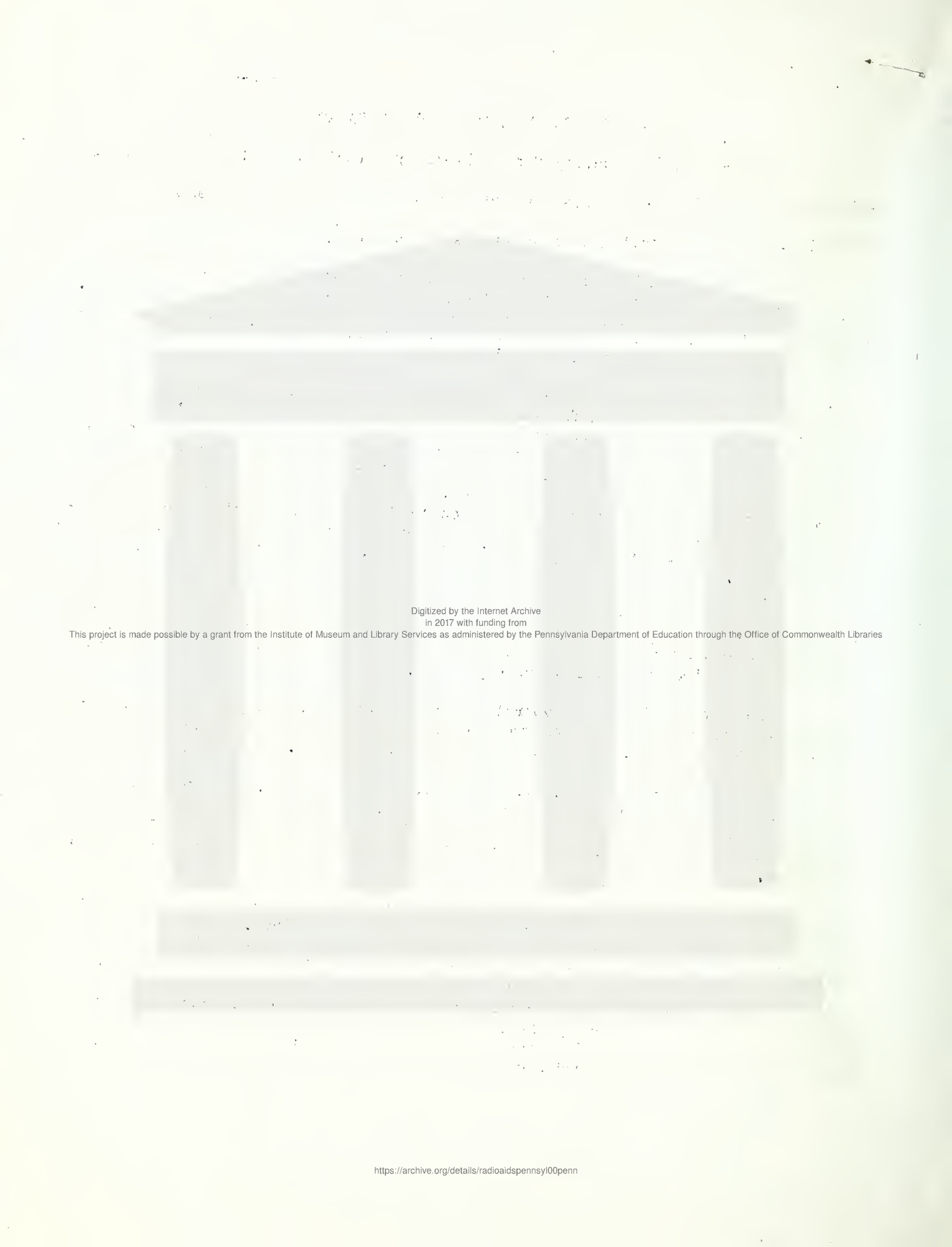
Through use of the radio, a signal or voice may be transmitted from any point along the 160 miles of highway and be heard simultaneously at each of the forty-nine points of stationary reception or in the police patrol cars. Conversations may be carried on by two or more persons.

Since the police cars operate in both directions and pass any given point at frequent intervals, a complete twenty-four hour check-up is obtainable on road conditions, fog, weather, flood, or for sudden emergencies.

In police emergencies, for instance, according to H. F. Mickel of the Police and Emergency Communication Section of RCA, should a police car whistle down a reckless driver, and the latter fail to stop, a few words spoken into the police car microphone, and the reckless driver will be blocked and halted within a couple of minutes.

Antennae for transmission from the thirty-one stationary locations had to be specially designed to perform functions peculiar to them. Some had to be directional; others had to be made to send out their waves in two directions at once; all had to be designed to avoid interference with simultaneous reception.

When it was first projected, many noted radio engineers considered as impossible the feat of spanning the 160 miles of turnpike super-highway with an ultra-frequency automatic radio transmission system. Now that it has been done they call it a "triumph of radio engineering.



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Because the ultra-short wave used in transmission over the turnpike net work has an effective range of approximately twenty miles and after that shoots off in a horizontal direction instead of following the earth's curve as a long wave does, it was necessary to erect on top of the mountains over the highway relays or boosters, and space them twenty miles apart in order to catch the sound waves and transmit them to the next booster before they go off at a tangent. There are seven of these booster stations or relays and they operate automatically without the help of human hands.

In this connection it is interesting to note that had only two antennae been used for the ultra-high frequency transmission - one at either end of the Turnpike - they would have had to tower 17,000 feet in the air. If three had been used, one in the middle of the stretch, each would have had to extend upward for 4,900 feet. Since this obviously was impossible, the engineers solved the difficulty by the use of the seven relay antennae.

Five miles of cable carry electric current to stations remote from the source of supply. To guard against interruptions in the smooth functioning of th equipment, every piece of apparatus has a secondary source of power supply. This is an auxiliary gasoline-driven engine which turns a generator. The auxiliary takes over automatically in case of a break in the electrical supply.

The relay stations on top of the seven mountain chains traversing the state between Harrisburg and Pittsburgh are similar to those used in giving distance to television transmission. To make them tamper-proof they are encased in steel. The relay antennae are embedded in more than seven feet of concrete and build to withstand a 150-mile gale, even when encrusted with an inch and a half of ice.

Installation of this comprehensive system of radio control for highway safety, or in case of accidents due to human fallibility or mechanical disorganization in a motor car, makes it possible now to have medical and material assistance at the scene within minutes after the call.

Included in this readiness program for emergencies are ambulances in each of the six turnpike maintenance buildings, and crash trucks at each of the tunnel entrances. Any wreck can be cleared off the highway in a matter of minutes, turnpike officials say. The trucks are equipped with chemical fire extinguishing material, asbestos suits for workers, ladders, and every detail of first-aid paraphernalia.